Stat and Data Analysis

CW 3.1 – Z-Scores and Percentiles NAME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Given the following set of test scores from a class of students:

{42, 55, 58, 62, 66, 66, 67, 69, 70, 71, 71, 71, 73, 75, 78, 78, 79, 83, 83, 84, 85, 87, 88, 90, 92, 95}

1. Find the percentile for the person who scored a 79% on the test.
2. Interpret what this percentile means (in context).
3. Suppose the average (mean) price of gas in a large city is $3.53 per gallon with a standard deviation of $0.05.
4. Convert $3.45 and $3.67 to *z*-scores.
5. Convert the following *z*-scores back into actual values: 1.80 and –1.60.
6. ACT scores are known to have an average of 21 points and a standard deviation of 4.7 points.
7. Find the Z score for a student who scored a 19 and interpret what this means (in context):
8. Find the Z score for a person who scored 32 and interpret what this means (in context):
9. Would a score of 10 be considered unusual? Explain why.
10. Would a score of 24 be considered unusual? Explain why.
11. Suppose the attendance at a movie theater averages 780 people with a standard deviation of 40 people. What would be a more unusual attendance: 705 people or 825? Briefly explain why.
12. In her school, Megan is in the 92nd percentile for girls heights. However, compared to other girls her age in the nation, she is only in the 48th percentile! How can this be true? Explain briefly. Be complete in your answer.
13. Tim and Larry both took standardized tests to get into college. Tim took the ACT and Larry took the SAT. Tim scored a 26 on the ACT and Larry scored an 1800 on the SAT. The year they took the test, the SAT mean = 1500 and s = 250, and the ACT mean = 20.8 and s = 4.8. Who scored higher (relatively)? Explain briefly.
14. Draw a density curve that has a width of 3 and is uniform
    1. What is the mean? The median?
    2. What % of data is below 1?
    3. What percent of data is above 0.5?
    4. What percent of data is between 1.5 and 2.7?